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09/549,464	04/14/2000	CLAIR J. BRANCH-SULLIVAN	UOM0186PUS	6143

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EXAMINER

HARRINGTON, ALICIA M

ART UNIT

PAPER NUMBER

2873

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary**Application No.**

09/549,464

Applicant(s)BRANCH-SULLIVAN ET AL. *AS***Examiner**

Alicia M. Harrington

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*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 4/14/00.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-43 is/are pending in the application.

4a) Of the above claim(s) 31-43 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-30 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 14 April 2000 is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

 If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. _____.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4-6.

4) Interview Summary (PTO-413) Paper No(s) 7.

5) Notice of Informal Patent Application (PTO-152)

6) Other:

DETAILED ACTION

Election/Restrictions

1. Claim 1-30, drawn to an apparatus and method for 3D imaging of optically invisible radiation, classified in class 250, subclass 330+.
2. Claims 31-43, drawn to an ionizing radiation detector, classified in class 250, subclass 370.

The inventions are distinct, each from the other because of the following reasons:

Inventions 1-30 and 31-43 are related as combination and subcombination.

Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the system doesn't require an ionizing radiation detector. The subcombination has separate utility such as detector for use in several different time of imaging systems

During a telephone conversation with David Syrowik on November 26, 2001 a provisional election was made with traverse to prosecute the invention of group I, claims 1-30. Affirmation of this election must be made by applicant in replying to this Office action. Claims 31-43 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one

or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Information Disclosure Statement

Information disclosure statements filed on 2/5/01 and 1/19/01 have been partially considered by the Examiner because several references disclosed fail to provide a month and year of publication or statement of from applicant that the cited references are prior art. And a reference was submitted in a foreign language without an English abstract or equivalent English translation.

The Examiner has considered the information disclosure statement filed on 5/8/00.

Specification

The disclosure is objected to because of the following informalities: In the specification, on pages 3-8, the applicant makes reference to published articles that support applicant's information in the disclosure. However, some of the articles have not been disclosed and others are improperly cited. For Example, at page 3, an article to Azum (1997) is incorporated in the disclosure; however, the article was never cited on either of the information disclosure statements. On page 5, an article to McGregor and Rojeski (1999) citation was incorporated into the disclosure, and the IDS recites several Mc Gregor et al. articles for 1999. Thus, the citations in the specification do not contain enough bibliographic information to discern which article the applicant is relying upon for his/her prior art information.

Appropriate correction is required.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

Figure 5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 26 details where the detector subsystem has stereo capabilities. However, the Examiner is unclear as to how the detector has stereo capabilities when the detector provides an electrical image signal that is used to produce stereo images. Thus, the claim fails to particularly point out and distinctly claim applicant's invention. The claim is examined as best understood by the Examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,3-5, 7, 9-11,13, 14, 17, 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Tumer (US 5,557,108).

Regarding claims 1 and 7, Tumer discloses integrated substance detection and identification system the system detects optically invisible radiation (gamma, neutron and x-ray) within an environment to obtain data that is processed to obtain stereoscopic data (see abstract; figures 6-7; col. 1, lines 63-67; col. 2, lines 1-3 and 9-17 and 24-25). The system provides a display for a 3D view of the radiation by utilizing natural human stereo imaging processes where the radiation is displayed as optically visible data (col. 8, lines 25-34) superimposed on a view of the environment (for example: a view of the articles in the luggage in the transport system).

Regarding claims 3 and 9, the transport system is an optically visible environment.

Regarding claims 4-5 and 10-11, the radiation is ionizing radiation. Tumer discloses that a specific type of scintillator crystal is used in the detectors (see col. 6, lines 10-14) system.

Regarding claims 13-14, Tumer disclose the detector can be a linear array (a set of point) or an area detector (col. 7, lines 23-32) dependent upon whether the container to be examined is moving during examination (different embodiments use different types of sensor).

Regarding claim 17, Tumer discloses an embodiment with multiple gamma radiation detectors (see col. 2, lines 15-20).

Regarding claim 26, Tumer's detector is in a stereoscopic system.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tumer, as applied above to claims 1 and 7 respectively.

Regarding claims 2 and 8, Tumer disclose a system where the environment is optically real. However, the Examiner takes official notice that system exists where stereoscopic/3D data is viewed in a virtual environment. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made that a virtual environment can have a stereoscopic/three dimensional image overlaid in it, especially when the purpose is to simulate the real world , and actual real- time world data is not critical to the user (for example: training programs).

Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tumer, as applied above to claim 7.

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Regarding claims 15-16, Tumer fails to specifically disclose whether the detector subsystem is active or passive. However, Tumer discloses the claimed invention with the exception of this feature, thus, it appears the invention would work equally as well with an active or passive detector, therefore active or passive detection lacks criticality since Tumer provides the claimed function.

Claims 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tumer, as applied above to claim 7, further in view of Jeanguillaume (US 5,4448,073).

Regarding claim 19, the radiation is ionizing radiation. Tumer discloses that a specific type of scintillator crystals is used in the detectors (see col. 6, lines 10-14) system. However, Tumer fails to specifically disclose the detector use collimators. Although, collimators in ionizing radiation system are well known as taught by Jeanguillaume.

In related field of endeavor, Jeanguillaume disclose a way to direct radiation to a curved scintillator crystal via a collimator. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a collimator in the system of Tumer, since it directs incident radiation into the scintillator and provides a better resolution image as taught by Jeanguillaume.

Regarding claim 20, see Examiner's notes in claim 19. Tumer further fails to specifically disclose the scintillator is curved. However, curved scintillator/detectors are well known in the art of gamma radiation, as taught by Jeanguillaume. Thus, it would have been further obvious to one of ordinary skill in the art at the time the invention was

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made to implement a gamma detection system with a curved scintillator, since it is well known scintillator /detector construction and provide quality resolution radiation images.

Regarding claims 21-22, Tumer disclose the detectors are linear array of individual detectors (col. 7, lines 23-26). And Jeanguillaume discloses the detector is a group of photo multiplier tube (see figure 11; col. 11, lines 47-65). Further, Jeanguillaume uses the group of photo multiplier tubes as a single moving detector to provide three dimensional good resolution images. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a compound eye detector provide a good resolution image signal.

Regarding claim 23-24, see Examiner's notes in claim 22 and 21 respectively. Additionally, Tumer use multiple detectors to provide stereoscopic imaging. However, it well known in the art to using a single detector (group of photo multipliers) moving to provide 3D data, as taught by Jeanguillaume.

Jeanguillaume discloses the detector is moveable through angles to provide enough coordinate information (col.2, lines 5-35) to provide a 3D reconstruction of an image. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use single detector moveable in three dimension to detect enough coordinate data to construct 3D images, as taught by Jeanguillaume, since it provides a good resolution 3D image.

Claims 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tumer, as applied above to claim 14, further in view of Jeanguillaume (US 5,448,073).

Regarding claim 25, Turner use multiple detectors to provide stereoscopic imaging. However, it well known in the art to using a single detector (group of photo multipliers) moving to provide 3D data (map of the radiating emitting organ sources), as taught by Jeanguillaume.

Jeanguillaume discloses the detector is moveable through angles to provide enough coordinate information (col.2, lines 5-35) to provide a 3D reconstruction of an image. The coordinates (3D map) correspond to all detected emission from the organ of interest. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use single detector moveable in three dimension to detect enough coordinate data to construct 3D images, as taught by Jeanguillaume, since it also provides a good resolution 3D image.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turner, as applied above to claim 17.

Regarding claim 18, Tumor fails to specifically disclose the gamma ray cameras are scanning camera and the camera are scanned through a plurality of angles to locate a source within the environment. However, the Examiner takes official notice that gamma ray scanning camera for taking images at plurality of angles to output three-dimensional images are notoriously well known in the art. These images identify detected radiation events of a source. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate scanning

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gamma ray cameras, since there usage in 3D imaging is well known to provide an quality output images on a display.

Claims 1,6,7,12, 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ball et al (US 5,534,694) in view of Manson (US 5,751,576).

Regarding claims 1 and 7, Ball discloses an infrared imaging system where the operator of plane where infrared image sensor provide images of the environment which are processed to provide visible images of the scene on a display (see col. 2, lines 1-20) viewable by an operator. The visible image is superimposed on the operator's direct view of the scene (col. 3, lines 50-62)-the natural human stereo view. However, Ball fails to specifically disclose the visible scene superimposed on the direct view of the viewer is a 3D/stereoscopic image superimposed. Although, it is well known in the art, as taught by Manson.

In a related field of endeavor, Manson discloses a system for transposing information from basic maps, environmental features, sensor signals, status information, or physical structures, to name a few, where the information is superimposed as a three dimension image onto the real world terrain (direct view of the viewer)- see abstract and col. 9, lines 11-21. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ball, as taught by Manson, to provide a direct intuitive comparison between two set of information without heavily relying upon intuitive perception in which an operator may lack, as taught by Manson (col. 5, lines 45-67 and col. 6, lines 1-3).

Regarding claims 6 and 12, the radiation is infrared radiation (see Examiners notes in claim 1 and 7 respectively).

Regarding claim 27, Ball and Munson's detector system are attached to moving vehicles; thus, the detector subsystem is portable.

Regarding claim 28-29, Ball|Munson discloses the system for use with a portable HUD display. However, it is notoriously well known in the art to incorporate stereoscopic viewing in HMD where the HMD includes a see through display and tracking system, official notice is taken to this fact. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Ball and Munson into a HMD environment, since it well known portable display, and it provides stereo and real scene viewing to the user.

Regarding claim 30, Ball and Munson provide real time visual feed to the drivers of the plane and tractor about the location. Further, Munson provide that other data feedback overlaid can be from numerous types of information (see col. 8, line 1+). Although, Ball Munson fail to specifically disclose showing the relative strength of the radiation-emitting source, Munson clearly supports providing numerous types of information to the user in the display. There^{fore}, it would have been obvious to one of ordinary skill in the art at the time the invention was made that optically invisible radiation system could provide strength data of at least one radiation source to user and that such implementation as claimed lacks criticality; since Ball and Munson disclose the claimed invention with the exception of displaying a specified data type.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hiyashi (JP408094438A) discloses an infrared sensor;

Kanai (JP 408243105A) discloses an optical ct image device; and

Arav et al (WO 98/31150) discloses a method and apparatus for monitoring biological sample.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M. Harrington whose telephone number is 703 308 9295. The examiner can normally be reached on Monday to Thursday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 703 308 4883. The fax phone numbers for the organization where this application or proceeding is assigned are 703 308 7724 for regular communications and 703 308 7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

AMH *AMH*
November 29, 2001

Georgia Epps
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